Comparison of the effects of deep manual acupuncture and acupressure on regional pressure pain threshold

Weihong Li BTCM(Beijing)

A thesis submitted as partial requirement for the degree of

Doctor of Philosophy of Science by research

Faculty of Science

University of Technology, Sydney

July 2005

CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Candidate

李卫红

Acknowledgements

This research study would not have been possible without the academic, scientific and technical help and contribution by many individuals from University of Technology, Sydney (UTS).

I would like to express my thanks to the Faculty of Science, the Department of Health Sciences and the College of Traditional Chinese Medicine for facilities and financial support. In particularly, Assoc. Prof Peter Miller, Assoc Dean and Prof. Ashley Craig, faculty research administrator Ms Rochelle Seneviratne, and technical assistant Philip Lawrence and Caterina Zappia.

This work was supported by the Thesis Completion Equity Grant of UTS and Australian Postgraduate Awards Scheme of Commonwealth Government, which provided the financial assistance for me to complete the project.

I am very grateful for the 46 subjects (22 in Study I and 24 in Study II), who willingly took part in and completed all four interventions, of their cooperation and interest.

I wish to thank my classmates and colleagues for all their help and advice.

Especially, the quality of this experiment was greatly enhanced by my principle supervisor, Dr Deirdre Cobbin and co supervisor, Mr Chris Zaslawski in all stages of the research for their leadership and intellectual input. Both participated throughout all data collection procedure. This was essential because the study was a dual blind project and it required the cooperation of three researchers for each subject and each intervention session during the whole process, therefore, for each hour of my own presence in data collection, another three hours in total were contributed by my two supervisors and one subject. I particularly appreciate the skills I have been able to develop in use of the

statistical package Minitab and the interpretation of statistical analysis of the data collected and entered into it. As a research student with a background other than English speaking, their effort and kindness in helping with the drafting of this thesis has been invaluable.

Finally, I would like to thank my family for their unflagging support during the last four years.

Thanks for you all!

Abstract

Background: The two separate studies reported in this thesis represent the third and fifth in an ongoing series that commenced at the College of Traditional Chinese Medicine (TCM), University of Technology Sydney (UTS) in 1999 into the effect of acupuncture on regional pressure pain threshold (PPT). The studies extended manual acupuncture research and were the first to include a study involving acupressure.

Aims: Study I: To compare the effects of unilateral and bilateral needling of the same acupoint on regional PPT. In addition the effects of individual and combined needling of two distinct acupoints on regional PPT were examined. Study II: To compare the effects of manual acupuncture and acupressure on regional PPT.

Methods: The design was used in both studies that were dual blind within subjects experimental design with randomised repeated measures. There were 22 healthy subjects (11 males and 11 females) in study I and 24 healthy females in study II, and all subjects completed the four interventions used in their study. For Study I, the same needle application technique was used in four manual acupuncture interventions: Large Intestine 4 (LI4) unilaterally; LI4 bilaterally; Large Intestine 11 (LI11) unilaterally; and LI4 in conjunction with LI11 both unilaterally. For Study II, unilaterally applied manual acupuncture to LI4; to Spleen 4 (SP4); unilaterally applied acupressure to LI4 and to a nonacupoint (NAP) used in two previous studies at UTS. PPT was measured at ten regional measurement sites across the body before and after each intervention; the change was expressed as mean percentage change in PPT from preintervention to post intervention. Both within and between intervention comparisons were examined; visual analogue scales were used to measure participants' perceptions of pain; needling or acupressure sensations; tension, and anxiety; and changes in acupuncturist's behaviour.

Results: Study I: following all four interventions, statistically significant increases in mean PPT were observed. These occurred at nine sites following LI4 either unilaterally or bilaterally; at six sites for the LI11 intervention; and at five sites following the combined LI11 and LI4 intervention. These increases were significantly greater for the bilateral LI4 intervention than the unilateral LI4 intervention at only two sites. There were no statistically significant differences in the subjective perceptions among the four interventions. Study II: statistically significant increases in PPT were elicited by both acupressure interventions and acupuncture to SP4. There was minimal difference in the effectiveness of these three interventions. Surprisingly, acupuncture to LI4 was significantly less effective and only produced statistically significant elevations in mean PPT at three sites. The data and design were examined extensively to identify a cause for this finding which was at odds with those from study I and also from the four related studies of PPT and acupuncture to LI4 conducted at UTS. No source of bias was identified and again, no statistically significant differences in the subjective perceptions among the four interventions were identified.

Conclusion: Study I: Needling of LI4 both unilaterally and bilaterally produced similar generalised increases in regional PPT. There was some evidence that the bilateral intervention was marginally more effective than the unilateral one. This provides limited support for the assumption from acupuncture theory that bilateral needling of the same point enhances the treatment effect. Needling of LI11 alone and in combination with LI4 however, both produced significantly weaker effects than either of the LI4 interventions. The latter effect was not expected in view of the assumption from acupuncture theory that combined needling of points from the same channel should enhance the treatment effect. Since the effect observed was weaker than that for LI4 alone, this suggests that there is some form of interaction occurring as a result of the combined needling. The finding supports a similar interaction reported for a previous related UTS study involving the points LI4 and Liver 3 (LR3). Study II: While the study findings suggested that acupressure to either LI4 or the NAP produced similarly generalised and strong effects on mean PPT and which were also comparable to

acupuncture to SP4; the anomalous results for acupuncture to LI4 suggests that all the study findings be treated with caution. Since no source of bias could be identified to explain the relative ineffectiveness of the LI4 acupuncture intervention, a likely conclusion is that an atypical sample was involved in the study: an outcome that is always possible when relatively small samples of volunteers (ie 24 subjects) are drawn from the wider population. Replication of study II is strongly recommended.

Contents

Tables

Figures